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TAGS: [ETTC](#) [PGOV](#) [PINR](#) [MCAP](#) [PREL](#) [TSPA](#) [FR](#) [RS](#) [CH](#) [GM](#)  
SUBJECT: ATHENA -- THE GERMAN GODDESS OF BALLISTIC MISSILE  
DEFENSE

Classified By: Global Affairs David L. Fisher for  
reasons 1.4 (b) and (d).

¶1. (C) SUMMARY: Bremen-based OHB-System is seeking a partnership with "like-minded" countries to develop and deploy a ballistic missile (BM) early warning/tracking satellite constellation, dubbed Athena, conceptually capable of accurately tracking northern latitude missiles from early launch through end-game impact. OHB sees Athena as European industry's answer to the evolving threat arisen from the proliferation weapons of mass destruction (WMD) combined with BM delivery systems. In particular, OHB desires to partner with U.S. industry on the Athena project to tap into the "billions the USG spends on BM defense" and firmly believes Athena would positively complement existing U.S. missile tracking systems. On December 11, OHB-System Department Head for Security and Defense, Dr.-Ing Gerd Hofschuster, briefed Econoff and Embassy military attach on the Athena concept.  
END SUMMARY

#### WATCHING BALLISTIC MISSILES FROM MT OLYMPUS

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¶2. (C) OHB touts Athena as a low-cost (500 million euro) BM warning/tracking satellite constellation with emphasis on anti-ballistic missile (ABM) radar cueing, a tool for treaty verification/armament control, and an effective means to enhance Space Situational Awareness (SSA). Athena's system architecture calls for a 6-9 satellite constellation situated in a Low-Earth-Orbit (LEO) equatorial ring. Given that the threats like Iran, Syria, Pakistan, and North Korea, are situated in the northern hemisphere along with NATO partners, Athena's Field of View (FoV) is focused on mid-northern hemisphere latitude countries. OHB said that for obvious political reasons, Russian territory would be excluded from Athena observation.

#### HOW IT WORKS - IT'S NOT ROCKET SCIENCE

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¶3. (C) Hofschuster, who formerly worked as a BM analyst contractor for the German External Intelligence Service (BND), is OHB's principle project manager for Athena and has been granted a European patent for the system concept. Hofschuster said Athena's solution, at its core, is to utilize space-based infra-red (IR) observation to combine mid-range and long-range BM tracking techniques. He said the satellites would have two "special" IR sensors; a boost-phase-detection (BPD) sensor and a mid-course-tracker (MCT) sensor. The BPD sensor would continuously scan geographic areas of interest for thermal signatures resembling a possible rocket launch event. Hofschuster boasted with confidence that Athena would be able to accurately detect all BM launches within its FoV without false positives within 30 km of altitude post-launch.

¶4. (C) Once the BPD has affirmatively located a missile/object of interest, the MCT kicks in and stays with the object until end-game impact. During the MCT stage, multiple Athena satellites simultaneously track the object of interest, which would allow for three-dimensional (3D) triangulation of the object's trajectory. During this process, Athena satellites would maintain a communication link with a data relay satellite in geo-synchronous orbit (GEO), which would in turn downlink the data to a dedicated ground station. From the ground station, OHB says the derived Athena data could be used to cue surface BM radar, which illuminate targets for ABMs. Hofschuster said this entire process would occur in near-real-time, and the tracking update rate would be one Hz.

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¶5. (C) Hofschuster said the real magic with Athena rests with space-based overhead observation combined with advanced algorithms and data processing techniques -- simple IR illumination is not enough. He said the trick is to use pre-defined thermal topography maps overlaid with Athena captured data (BPD) and utilizing change detection techniques to identify thermal anomalies. Once a thermal anomaly is spotted, it is isolated by blacking out all thermal images around it. After a short assessment period, if the anomaly persistently exhibits signs of a ballistic trajectory, the object is tracked until end-game.

¶6. (C) Once tracking is underway, Hofschuster said the object will continue to be tracked even after the rocket engine burn terminates. He said this is an important feature in that it allows Athena to track both staged liquid fuel rockets and faster burning solid fuel rockets without interruption. Another area of concern is tracking of multiple BM events and multiple re-entry vehicles. Hofschuster said this problem has also been solved through data processing techniques and claimed that through extensive worst case scenario simulations, Athena was able to track 100 simultaneous BM events without saturation. He added that Athena would maintain tracking lock on non-ballistic re-entries, such as atmospheric range extension maneuvers or evasive maneuvering.

#### SPACE SITUATIONAL AWARENESS AND TREATY VERIFICATION

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¶7. (C) OHB claims that Athena could catalogue all satellites in LEO within 20 minutes using its mid-course tracker. Athena satellites would contain a continuously updated (uplinked) on-board catalogue of all space objects, which would allow Athena to use change detection techniques to recognize new sizable objects/satellites in LEO. Hofschuster added that Athena would not be limited to monitoring BM flights, but would also be able to detect development activities such as engine tests and flight tests making it a useful tool for treaty verification and monitoring of dangerous armament programs.

#### CHINA GOT A LITTLE BM HELP FROM RUSSIA

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18. (C) Hofschuster said when he was analyzing BM flight data for the BND, he spoke very proudly of his role in determining that back in 2000 Russian rocket scientists very likely assisted China with its BM program. He said the BND's pre-2000 analysis of Chinese BM tests concluded that China was having all kinds of problems with its multi-stage BM program and cited a 50% failure rate. However, he said after some help from the Russians, the Chinese post-2000 BM success rate went up to nearly 100%. Hofschuster did not provide any details about how exactly the BND knew Russian scientists were assisting the Chinese BM program, but spoke very confidently that the Russians were in fact there. He said the Chinese likely had to swallow their pride by asking the Russians for help, but likely had little choice due to massive setbacks resultant from the frequent failures.

#### A CALL FOR PARTNERS

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19. (C) Hofschuster emphasized that the genesis of Athena came about as a BM warning solution for Europe and for European deployed forces, but OHB believes Athena would have a lot to offer partners on the other side of the Atlantic.

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He made a strong pitch for joint US/German cooperation on Athena and said the program could easily work itself into a NATO or US/German/French framework. OHB is also leaving the door open to possible cooperation with Russia in connection with its Ramos program. Though Hofschuster admitted Athena is largely conceptual, he said the transition to an operational satellite constellation would be straight forward. Elaborating, he said the basic instrument technology is already available and the Athena satellite bus would be based on OHB's already flying SAR-Lupe architecture.

#### COMMENT

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110. (C) OHB clearly believes in the Athena concept and the work of Dr. Hofschuster, but it also realizes that this program has little to no commercial prospects and would be dependent on government funding. In addition, OHB knows that Germany would certainly not foot the bill alone and it would be very difficult to raise the money from its European partners. OHB sees the U.S. as a promising partner given its comparably large defense budget and priorities on BM defense. However, until funding can be arranged to start bending metal, Athena will likely remain mythology stuck in the world of simulations.  
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